AF

Patent
147117-100001

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BOARD OF PATENT APPEALS AND INTERFERENCES

Application No.: 09/812,067	**Confirmation No. 8999**
Applicant: C. KUMAR N. PATEL et al.	
Filed: March 19, 2001	
TC/AU: 3736	
Examiner: R. Nasser	
Docket No. 147117-100001	
Customer No.: 34026	

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF APPEAL BRIEF

Applicants hereby enclose for filing an Appeal Brief (in triplicate) for the above referenced application.

The items checked below are appropriate:

☒ **"Small Entity Status"** of this application under 37 CFR 1.9 and 1.27 has been claimed.

CERTIFICATE OF MAILING
(37 C.F.R. §1.8a)

I hereby certify that this paper (along with any referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as First Class Mail in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

	Fay Lum-Lee
	Name of Person Mailing Paper
September 9, 2005	Fay Lum-Lee
Date of Deposit	Signature of Person Mailing Paper

FEE FOR FILING A BRIEF IN SUPPORT OF AN APPEAL

Pursuant to 37 CFR 1.17(c), the fee for filing the Appeal Brief is:

☐	other than a small entity	$500.00
☒	small entity	$250.00
	Appeal Brief Fee Due:	$250.00

☐ A check in the amount of is enclosed to cover the above fee(s).

☒ Charge Jones Day's Deposit Account No. **50-2468** in the amount of **$250.00**.

☒ The Commissioner is authorized to charge Jones Day's Deposit Account No. **50-2468** for any fees required under 37 CFR §§ 1.16 and 1.17 that are not covered, in whole or in part, by a check enclosed herewith and to credit any overpayments to said Deposit Account **50-2468**.

Respectfully submitted,

JONES DAY

Dated: September 9, 2005

By: _____
Coe A. Bloomberg
Reg. No. 26,605

555 South Flower Street, 50th Floor
Los Angeles, California 90071-2300
(213) 489-3939

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APPEAL BRIEF

Real Party In Interest

The real party in interest is Pranalytica, Inc., located at 1101 Colorado Boulevard in Santa Monica, California. An assignment by Appellants C. Kumar N. Patel and Narasimhan L. Ravi to Pranalytica of this application was recorded on July 14, 2001 (Reel/Frame: 012009/0207).

CERTIFICATE OF MAILING
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Related Appeals and Interferences

Neither Appellants nor Appellants' assignee or attorney are aware of another Appeal or Interference that will affect or have a bearing on the Board's decision of this Appeal.

Status of Claims

Claim 54 is rejected. No claims are allowed. Claim 54 is set out in Appendix A.

Status of Amendments

No Amendment has been filed subsequent to the Final Rejection in this case.

Summary of Invention

The invention generally pertains to medical uses of absorption spectroscopy to quantify component concentrations in human gas emissions such as breath or gas emitted through the skin (page 1, lines 6-9). The specific embodiment that is the subject of this appeal is shown in FIG. 3, and id described at pages 22-24 of appellant's specification. A pulsed beam is generated by power supply 9 (page 22, lines 5-7). The pulsed beam is passed through the calorimetric gas cell 8 at two frequencies, each of a distinct and different time.

The first frequency corresponds to a fundamental absorption peak frequency of the specific component and the second frequency does not correspond to the fundamental absorption peak frequency of the specified component (page 22, lines 9-13). When the pulsed beam is passed through the calorimetric gas cell 8 at the first frequency, a reference sample absorbs energy from the beam and causes heating within the calorimetric gas cell 8 (page 22, lines 21-23). This heating occurs at regular and periodic intervals because the beam is pulsed and no absorption or heating occurs between pulses (page 23, lines 1-2).

The periodic heating within the calorimetric cell 8 causes pressure fluctuations to be generated within the calorimetric gas cell 8, called optoacoustic signals, having a frequency that

is approximately equal to the pulse frequency of the beam and an amplitude that its proportional to the absorption by the reference sample (page 23, lines 4-7). Microphone 27 detects the optoacoustic signals and generates a first signal output that is measured by electronic circuitry 27 (page 23, lines 7-9). A detector 17 detects the transmitted portion of the beam as a second signal output that is measured and recorded by electronic circuitry 19 (page 23, lines 9-11).

When the beam passes through the calorimetric gas cell 8 at the second frequency, the specified component does not absorb energy and no optoacoustic signal should be present (page 23, lines 12-14). This same procedure is then repeated for a gas sample, and at the second frequency and third and fourth and fifth and sixth signal outputs, respectively, are obtained (page 22, line 5-page 23, line 14).

In summary, the first and second frequency produce:

(1) a first, reference sample, optoacoustic signal;

(2) a second, reference sample, signal of power output of the transmittal beam;

(3) a third, gas sample, optoacoustic signal; and

(4) a fourth, gas sample, signal of power output of the transmittal beam;

(5) a fifth, gas sample, signal optoacoustic signal at the second frequency; and

(6) a sixth, gas sample, signal of power output of the transmittal beam at the second frequency.

As claimed in claim 54, the concentration of the gas component tube to be quantified is determined by the following equation:

$$C = \text{constant3} * \left[\frac{S_{AC}(f_1)}{P(f_1)} - \frac{S_{AC}(f_2)}{P(f_2)} \right],$$

where C corresponds to the concentration of the specified component, f_1 corresponds to the at least one fundamental absorption peak frequency, $S_{AC}(f_1)$ corresponds to the third signal outputs, $P_1(f_1)$ corresponds to the fourth signal outputs, f_2 corresponds to a frequency that is not a fundamental absorption peak frequency, $S_{AC}(f_2)$ corresponds to the fifth signal output, $P(f_2)$ corresponds to the sixth signal outputs, and constant3 is determined by solving the equation for constant3 and substituting the first signal outputs for $S_{AC}(f_1)$, the second signal outputs for $P_1(f_1)$, and the known concentration of the reference sample for C

Issues

Two issues are presented by this Appeal.

1. Is there a suggestion to combine the three references relied on in rejecting Appellants' claims.

2. If the three references are combined, do they teach the invention claimed by appellants.

Grouping of Claims

A single claim is presented.

ARGUMENT

Barry (6,363,772) teaches a single frequency laser beam for both a sample and a known reference (col. 8, lines 59-63) and thus produces only the first four of the six signals utilized by appellants, see, e.g., the June 1, 2005 Office Action, at page 2, "Barry does not use a second wavelength at a non-resonant frequency."

Olender (5,8343,632) teaches the use of laser beams 24 and 26 for detecting gas leaks in industrial applications such as heat exchanges. For example, at column 9, line 9-col. 10, line 44 cited by the Examiner, Olender describes use of a fan to blow away leaking gas. Signals from

the beams, with and without the fan, are used to produce two acoustic signals and determine if a leak exists. The two signals are compared. If the difference is zero, there is no leak (col. 10, lines 272-29). If the difference is non-zero, a leak exists (col. 10, lines 29-32). Olender does not teach measuring the power of the incident beam. So, Olender does not teach the sixth signal of Appellant's claim 54 (nor does Olender teach the first, second or fourth signal claimed by Appellants). It is submitted that there is nothing to suggest the combination of a laser used to detect a medical condition by means of (Barry) with Olender used simply to determine, yes or no, whether a gas leak from a component, such as a heat exchanger, has occurred. But even if such a combination were made, the Examiner concedes that "the combination does not disclose the formula and subtracting a reference signal from the measuring signal" as claimed by appellants (June 1, 2005 Office Action at page 3). For this, the Examiner turns to the teaching of Bell "in column 30, with respect to element 25."

Bell has but 6 columns, and here is what Bell discloses as to element 25:

> The amplified and detected output signal, which is a measure of the absorbance of the laser beam by the sample, is fed to one input of a divider 25 for division by a second signal derived from a second lock-in amplifier 26 which similarly lock-in amplifies and detects the beam power detected by a beam power detector 23. The lock-in amplifier 26 receives a reference signal from the chopper 17. The output of the divider 25 corresponds to a sample absorption signal normalized to the beam power and this signal is recorded in a recorder 27 as a function of the wavelength of the tunable laser 28 as tuned by a tuner motor 29 which tunes the laser 28 by changing the angle Θ of the diffraction grating 12. Thus, the recorder 27 records an absorption spectrum of the sample, such absorption spectrum being normalized to the beam power.

It is submitted that this disclosure Bell falls far short of appellants' equation that reads:

$$C = \text{constant3} * \left[\frac{S_{AC}(f_1)}{P(f_1)} - \frac{S_{AC}(f_2)}{P(f_2)} \right],$$

where C corresponds to the concentration of the specified component, f_1 corresponds to the at least one fundamental absorption peak frequency, $S_{AC}(f_1)$ corresponds to the third signal outputs, $P_1(f_1)$ corresponds to the fourth signal outputs, f_2 corresponds to a frequency that is not a fundamental absorption peak frequency, $S_{AC}(f_2)$ corresponds to the fifth signal output, $P(f_2)$ corresponds to the sixth signal outputs, and constant3 is determined by solving the equation for constant3 and substituting the first signal outputs for $S_{AC}(f_1)$, the second signal outputs for $P_1(f_1)$, and the known concentration of the reference sample for C.

As held by the Federal Circuit in the case of *In re Geiger*, 2 U.S.P.Q.2d 1277, 1278 (1987):

> Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching suggestion or incentive supporting the combination. *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). We are convinced that the latter are not present here.

As explained in MPEP 706.02(j) "the prior art reference (or references when combined) must teach or suggest **all** the claim limitations" (emphasis added).

Respectfully submitted

JONES DAY

Date: September 9, 2005

By _____
Coe A. Bloomberg
Reg. No. 26,605
Attorney for Applicant

555 South Flower Street, 50th Floor
Los Angeles, CA 90071-2300
(213) 489-3939

EXHIBIT A

54. A diagnostic method for high sensitivity detection of component concentrations in human gas emissions comprising:

(a) collecting a gas sample in a calorimetric gas cell having an acoustic microphone within said calorimetric gas cell, wherein the gas sample may contain a specified component being associated with a plurality of fundamental absorption peak frequencies;

(b) passing a pulsed tunable optical radiation beam through the calorimetric gas cell when the calorimetric gas cell (1) contains a reference sample having a known concentration of the specified component and (2) contains the gas sample, wherein the tunable optical radiation beam has a first frequency corresponding to one of the fundamental absorption peak frequencies;

(c) measuring, after the tunable optical radiation beam passes through the calorimetric gas cell, as first signal outputs an optoacoustic signal in the calorimetric gas cell detected by the acoustic microphone when the gas cell contains the reference sample, as second signal outputs a power of the tunable optical radiation beam when the gas cell contains the reference sample, as third signal outputs the optoacoustic signal in the calorimetric gas cell detected by the microphone when the gas cell contains the gas sample, and as fourth signal outputs the power of the tunable optical radiation beam when the gas cell contains the gas sample;

(d) passing a pulsed tunable optical radiation beam through the calorimetric gas cell when the calorimetric gas cell contains the gas sample, wherein the tunable optical radiation beam has a second frequency not corresponding to one of the fundamental absorption peak frequencies;

(e) measuring, after the tunable optical radiation beam passes through the calorimetric gas cell, as fifth signal outputs the optoacoustic signal in the calorimetric gas cell detected by the microphone when the gas cell contains the gas modulation frequency when the gas cell contains the gas sample, and the sixth signal outputs the power of the tunable optical radiation beam when the gas cell contains the gas sample; and

(f) determining a concentration of the specified component in the gas sample using the following equation:

$$C = \text{constant3} * \left[\frac{S_{AC}(f_1)}{P(f_1)} - \frac{S_{AC}(f_2)}{P(f_2)} \right],$$

where C corresponds to the concentration of the specified component, f_1 corresponds to the at least one fundamental absorption peak frequency, $S_{AC}(f_1)$ corresponds to the third signal outputs, $P_1(f_1)$ corresponds to the fourth signal outputs, f_2 corresponds to a frequency that is not a fundamental absorption peak frequency, $S_{AC}(f_2)$ corresponds to the fifth signal output, $P(f_2)$ corresponds to the sixth signal outputs, and constant3 is determined by solving the equation for constant3 and substituting the first signal outputs for $S_{AC}(f_1)$, the second signal outputs for $P_1(f_1)$, and the known concentration of the reference sample for C.